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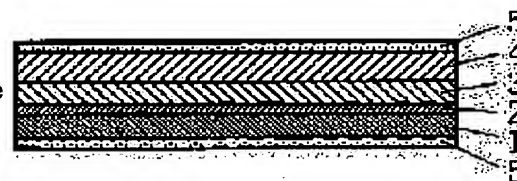
(72)Inventor : NAKANO ICHIRO
 ICHIKAWA HIROKI
 IZUMITANI SEIJI

(54) COVER TAPE FOR FEEDING ELECTRONIC PART AND ELECTRONIC PART FEED BODY

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a cover tape for feeding an electronic part having both of good conductivity and proper adhesiveness and capable of reducing the irregularity of peel strength at the time of peeling.

SOLUTION: The cover tape for feeding the electronic part comprises a laminate of four or more layers formed by successively laminating at least one layer selected from an undercoating layer and an intermediate layer and an adhesive layer on a support, and by providing a conductive layer formed on at least the back surface of the support and the surface of the adhesive layer by vapor deposition. The conductive layer can be constituted of, for example, Al, Cu, Ag, Ni, Ti, Fe, Cr, Zr, Ta, Zn or an alloy containing these metals and has a thickness of about 1-200 Å. The undercoating layer can be constituted of, for example, a urethane adhesive or an electrostatic induction preventing adhesive and the intermediate layer can be constituted of, for example, a polyolefinic resin.



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CLAIMS

[Claim(s)]

[Claim 1] The covering tape for electronic-parts conveyance which consists of a layered product of four or more layers which has the conductive layer which the laminating of at least one layer chosen from the under coat and the interlayer and glue line was carried out one by one, and was formed of vacuum evaporation on the base material at least at one side while on a base material tooth back and the front face of a glue line.

[Claim 2] The covering tape for electronic-parts conveyance according to claim 1 which consists of alloys with which a conductive layer contains aluminum, Cu, Ag, nickel, Ti, Fe, Cr, Zr, Ta, Zn, or these metals.

[Claim 3] The covering tape for electronic-parts conveyance according to claim 1 or 2 whose thickness of a conductive layer is 1-200A.

[Claim 4] The covering tape for electronic-parts conveyance according to claim 1 whose thickness of a glue line a glue line is 2-90 micrometers to a base polymer and this base polymer 100 weight section, including the tackifier of the 2 - 100 weight section.

[Claim 5] The covering tape for electronic-parts conveyance according to claim 1 on which the under coat consists of urethane system adhesives or electrostatic-induction prevention adhesives.

[Claim 6] The covering tape for electronic-parts conveyance according to claim 1 on which the middle class consists of polyolefine system resin.

[Claim 7] The covering tape for electronic-parts conveyance given in which term of claims 1-6 which have the surface resistivity of both the front faces of a covering tape in the range of 10²-10¹³ohms / **.

[Claim 8] The covering tape for electronic-parts conveyance given in which term of claims 1-7 whose light transmission is 60% or more.

[Claim 9] The covering tape for electronic-parts conveyance given in which term of claims 1-8 whose friction band electrical potential differences of the front face by the side of a glue line are less than [3000V].

[Claim 10] The electronic-parts conveyance object with which it is the electronic-parts conveyance object equipped with the electronic-parts hold section which holds electronic parts, and the covering tape which covers this electronic-parts hold section, and the covering tape for electronic-parts conveyance of a publication is used for which term of claims 1-9 as said covering tape.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the covering tape used for the electronic-parts conveyance object used for conveying chip mold electronic parts etc., and this electronic-parts conveyance object until it is mounted in a substrate.

[0002]

[Description of the Prior Art] The taping reel method using the tape for electronic-parts conveyance (electronic-parts conveyance object) as a general conveyance gestalt of chip mold electronic parts, such as a chip fixed resistor and a stacked type ceramic condenser, is learned. By this taping reel method, electronic parts are inserted in the pocket for electronic-parts receipt prepared in the die-length direction of the carrier tape made of plastics or paper at fixed spacing, and after carrying out the heat seal of the top face on a covering tape and enclosing electronic parts, it is rolled round in the shape of a reel, and is conveyed. And in making processes, such as the circuit board of a conveyance place, the automatic ***** system which adsorbs the inserted electronic parts automatically by the air jet hole after exfoliating said covering tape, and is supplied on a substrate is in use.

[0003] In a series of processes to the chip supply to a substrate from such taping, when the electronic parts by which taping packing was carried out exfoliate a covering tape, it adheres to a tape glue line front face, and welds to it, and the trouble that it may be unable to take up by the adsorption nozzle exists. Moreover, the danger of electronic parts deteriorating or being destroyed by static electricity generated when a carrier tape and a covering tape are contacted with small-and-light-izing of electronic parts, such as IC, and advanced features in recent years, and static electricity generated at the time of exfoliation of a covering tape is high. Furthermore, the electronic parts contained by the orientation may jump out of a receipt pocket by the variation in the peel strength of a covering tape, or a location gap may occur. Therefore, while the electrostatic cure which makes small a zone-of-contact electrical potential difference and an exfoliation band electrical potential difference is demanded from such a covering tape for electronic-parts conveyance, it is required that variation in peel strength should be made small.

[0004] Although a conductive paint is applied to the glue line front face of a covering tape or a means to infiltrate an electric conduction agent is in a covering tape if it is only only giving conductivity as the above-mentioned cure against static electricity (refer to JP,10-86993,A), the adhesive property of a covering tape falls and it becomes impossible to achieve enough the function to enclose electronic parts, by this approach. Moreover, conductive particles and carbon black, such as a metallic oxide, are scoured to the approach (refer to JP,8-112880,A) of preparing the mineral matter layer which consists of an interlayer and a metallic foil layer, or an inorganic substance vacuum evaporation layer as the above-mentioned cure against static electricity between the sealant layer (glue line) of a covering tape, and an extension resin layer (base material), and a glue line or a base material, or the approach which has applied enough and is carried out is also proposed. However, by these approaches, when it was fully going to give conductivity, the transparency (light transmission) of a covering tape fell and there was a problem that a check by looking and the check of the components by the image processing became difficult, or the variation in the peel strength of a tape became large.

[0005]

[Problem(s) to be Solved by the Invention] Therefore, the purpose of this invention combines the good conductivity which can prevent the electrostatic discharge of the electronic parts by contact on the frictional

electrification and the covering tape glue line front face by the vibration at the time of transportation of electronic parts etc., exfoliation electrification at the time of covering tape exfoliation, etc., and a moderate adhesive property, moreover can make small the variation in the peel strength at the time of exfoliation, and is to offer the covering tape for electronic-parts conveyance which can prevent the elutriation of the electronic parts from an electronic-parts conveyance object etc.

[0006] In addition to the above properties, other purposes of this invention are to offer the covering [with high transparency] tape for electronic-parts conveyance with the good visibility of electronic parts. The purpose of further others of this invention is to offer the electronic-parts conveyance object equipped with the covering tape which has the above outstanding engine performance.

[0007]

[Means for Solving the Problem] When the conductive layer was formed [in order that this invention persons may attain the above-mentioned purpose, as a result of inquiring wholeheartedly,] at least in one side by vacuum evaporation on [preparing the specific layer between the base material and the glue line, and] a base material tooth back and the front face of a glue line, while being able to prevent the fault of the electronic parts resulting from static electricity, variation in the peel strength at the time of exfoliation could be made small, and a header and this invention were completed for the ability of transparency to be held moreover.

[0008] That is, this invention offers the covering tape for electronic-parts conveyance which consists of a layered product of four or more layers which has the conductive layer which the laminating of at least one layer chosen from the under coat and the interlayer and glue line was carried out one by one, and was formed of vacuum evaporation on the base material at least at one side while on a base material tooth back and the front face of a glue line.

[0009] This invention is the electronic-parts conveyance object equipped with the electronic-parts hold section which holds electronic parts, and the covering tape which covers this electronic-parts hold section again, and offers the electronic-parts conveyance object with which the above-mentioned covering tape for electronic-parts conveyance is used as said covering tape.

[0010]

[Embodiment of the Invention] Hereafter, this invention is explained to a detail, referring to a drawing if needed. Drawing 1 is the outline sectional view showing an example of the covering tape for electronic-parts conveyance of this invention. The laminating of an under coat 2, an interlayer 3, and the glue line 4 is carried out to this order on the base material 1, and, as for this covering tape for electronic-parts conveyance, the conductive layer 5 is formed in the tooth back of a base material 1, and the front face of a glue line 4.

[0011] Plastic film or sheets, such as polyolefine system resin; polyethylene terephthalate, such as paper; polyethylene and polypropylene (for example, the amount polypropylene of giant molecules), polybutylene terephthalate, and polyethylenenaphthalate, etc. are mentioned that what is necessary is just what has free-standing as a base material 1. [, such as polyester; nylon (polyamide); polystyrene,] [, such as styrene resin,]

[0012] In a base material 1, coupling agents, such as the additive of common use, for example, an antioxidant, an ultraviolet ray absorbent, a softener, a rust-proofer, an inorganic particle, antistatic agents (for example, quarternary-ammonium-salt system etc.), conductive metal powder, an organic conductive polymer agent, a titanium system, and a silane system, etc. may be added if needed.

[0013] As for the melting point of a base material 1, it is desirable that it is 90 degrees C or more. When the melting point of a base material 1 is less than 90 degrees C, at the time of taping of electronic parts, a base material 1 contracts, or it fuses, the condition of taping becomes unstable, and there is a possibility of electronic parts falling or jumping out.

[0014] Base materials 1 may be any of a monolayer or a double layer. Generally the thickness of a base material 1 is about 2-250 micrometers, and is about 20-200 micrometers preferably. The surface treatment of common use, for example, corona treatment etc., may be performed to the field in which an under coat 2 is formed among base materials 1 if needed.

[0015] An under coat 2 is a layer for securing the reinforcement between layers of a base material 1 and an interlayer 3 (when not preparing an interlayer, they are a base material 1 and a glue line 4), and can consist of adhesives of well-known thru/ or common use. As desirable adhesives which constitute an under coat 2, urethane system adhesives, organic system electrostatic-induction prevention adhesives, etc. are mentioned. If an under coat 2 is constituted from organic system electrostatic-induction prevention adhesives, the static-free

effectiveness can be raised further, for example, the friction band electrical potential difference of a glue line side front face can be reduced greatly. In addition, the under coat which consists of these organic electrostatic-induction prevention adhesives can also be formed between an interlayer 3 and a glue line 4. For example, while preparing the under coat which consists of urethane system adhesives etc. between a base material 1 and an interlayer 3, the under coat which consists of organic system electrostatic-induction prevention adhesives may be prepared between an interlayer 3 and a glue line 4.

[0016] As said organic system electrostatic-induction prevention adhesives, the Altech Co., Ltd. make, a trade name "BONDEIP" (compound which consists of choline-chloride methacrylate, methyl methacrylate, 2-methylimidazole, etc.), etc. can be used, for example.

[0017] The thickness of an under coat 2 is about 0.05-30 micrometers. When it constitutes an under coat 2 from urethane system adhesives etc., it is about 0.05-10 micrometers preferably. Since the effectiveness of preventing being unable to reduce the friction band electrical potential difference on the front face of a tape so much, but electronic parts adhering to a glue line 5 will become is hard to be acquired if thickness is too small in constituting an under coat 2 from organic system electrostatic-induction prevention adhesives, the thickness of 0.1 micrometers or more is desirable. If the thickness of an under coat 2 is too large, the volume diameter as a tape increases, and it becomes easy to come out of fault, such as not being attached in a tape machine, and is disadvantageous also in cost. An under coat 2 can be formed with the coating method of common use etc.

[0018] In addition, when the laminating of a base material 1 and the interlayer 3 can be carried out in high bond strength, it is not necessary to necessarily form an under coat 2.

[0019] An interlayer 3 is a layer for raising the adhesion of a base material 1 and a glue line 4, for example, can consist of thermoplastics, such as polyolefine system resin, thermoplastic elastomer, rubber, etc. It is desirable that polyolefine system resin constitutes especially. The polymer which constitutes an interlayer 3 is independent, or can be used combining two or more sorts.

[0020] as said polyolefine system resin -- polyethylene (low density polyethylene --) a line -- ethylene [, such as low density polyethylene, metallocene catalyst method polyethylene, medium density polyethylene, and high density polyethylene,]-alpha olefin copolymer; ethylene copolymer [-- for example An ethylene-acrylic-acid copolymer (EAA), ethylene-unsaturated-carboxylic-acid copolymers [, such as an ethylene-methacrylic-acid copolymer (EMAA),]; -- ionomer (resin which constructed bridge with metal in some carboxyl groups of said ethylene-unsaturated-carboxylic-acid copolymer); -- an ethylene-methyl-acrylate copolymer -- Ethylene-(meta) acrylic ester copolymer; ethylene-vinylacetate copolymers, such as an ethylene-ethyl-acrylate copolymer (EEA) and an ethylene-methyl-methacrylate copolymer (EVA);], such as an ethylene-vinylalcohol copolymer, etc. is illustrated.

[0021] If needed, to the middle class's 3 front face, surface treatment of common use, such as corona treatment, plasma treatment, and burner processing, can be performed, and activity can also be raised on it. Although the middle class's thickness can be suitably chosen in the range which does not spoil the handling nature when considering as a covering tape etc., generally it is about 5-30 micrometers.

[0022] The middle class 3 can form by the methods of laminating common use for having used for example, the extrusion laminating method, the T-die tandem extrusion laminator, etc., such as a co-extrusion method and the dry laminate method. In addition, when the laminating of a base material 1 and the glue line 4 can be carried out in high bond strength by the under coat 2, it is not necessary to necessarily form an interlayer 3.

[0023] As a base polymer which constitutes a glue line 4, thermoplastics, such as polyolefine system resin, polyester system resin, and styrene resin, and elastomers, such as thermoplastic elastomer, can be used, for example. These polymers are independent or can be used combining two or more sorts.

[0024] as said polyolefine system resin -- polyethylene (low density polyethylene --) a line -- low density polyethylene, metallocene catalyst method polyethylene, and medium density polyethylene -- polypropylene, such as high density polyethylene, and an alpha olefin copolymer (ethylene propylene rubber --) an ethylene-butene-1 copolymer, a propylene-butene-1 copolymer, etc. -- etc. -- polyolefine; ethylene system copolymer [-- for example Ethylene-unsaturated-carboxylic-acid copolymer; ionomers, such as an ethylene-acrylic-acid copolymer (EAA) and an ethylene-methacrylic-acid copolymer (EMAA); An ethylene-methyl-acrylate copolymer, Ethylene-(meta) acrylic ester copolymer; ethylene-vinylacetate copolymers, such as an ethylene-ethyl-acrylate copolymer (EEA) and an ethylene-methyl-methacrylate copolymer (EVA);], such as an ethylene-vinylalcohol copolymer, etc. is mentioned.

[0025] As said thermoplastic elastomer, for example SIS (styrene-isoprene-styrene block copolymer), SBS (styrene-butadiene-styrene block copolymer), SEBS (styrene-ethylene-butylene-styrene block copolymer: water garnish of SBS), SEPS (styrene-ethylene-propylene-styrene block copolymer: water garnish of SIS), SEP (Styrene-ethylene-propylene block copolymer) etc. -- styrene thermoplastic elastomer (styrene system block-copolymer; for example, styrene system block copolymer of 5 % of the weight or more of styrene contents); -- polyurethane system thermoplastic-elastomer; -- thermoplastic-elastomer-polyester; -- blend system thermoplastic-elastomer [, such as a polymer blend of polypropylene and EPT (ternary system ethylene-propylene rubber),]; -- the polyisoprene system polymer by which hydrogenation was carried out, the polyisobutylene system polymer by which hydrogenation was carried out are mentioned.

[0026] In a glue line 4, a tackifier is usually added. As a tackifier, petroleum resin [the alicycle group petroleum resin which carried out hydrogenation of aliphatic series petroleum resin (C5 system), aromatic series petroleum resin (C9 system), and said aromatic series petroleum resin], rosin system resin, alkylphenol resin, styrene resin, etc. are mentioned, for example. These tackifiers are independent, or they can be used, combining them two or more sorts. While taping workability improves by making a glue line 4 contain a tackifier, stability and good adhesive strength are obtained to package base materials, such as a carrier tape.

[0027] As for the softening temperature of adhesion grant resin, it is desirable that it is 50 degrees C or more. When softening temperature is less than 50 degrees C, it is easy to soften a glue line at the time of transportation or storage, electronic parts adhere and weld to a glue line 4, and it is easy to produce fault at the time of the inclusion to the circuit board etc.

[0028] the loadings of a tackifier -- the base polymer 100 weight section -- receiving -- 2 - 100 weight section extent -- it is 5 - 50 weight section extent preferably. When the loadings of a tackifier are under 2 weight sections, adhesive strength is low and there is a possibility that a tape may float and components may jump out, after taping. Moreover, when the loadings of a tackifier exceed the 100 weight sections, it becomes difficult for it to be too high, and for electronic parts to adhere and weld to a glue line 4, and for adhesive strength to adsorb electronic parts by the air jet hole at the time of the inclusion to the circuit board etc.

[0029] Additives, such as antioxidants, such as the Lynn system and a phenol system, an ultraviolet ray absorbent, a rust-proofer, a softener, a surfactant, an antistatic agent, a bulking agent, a coupling agent, and a cross linking agent, may be further blended with a glue line 4. Generally the loadings of each additive are 0 - 10 weight section (for example, 0.01 - 10 weight section) extent to the base polymer 100 weight section. If the loadings of an additive exceed 10 weight sections, it will become easy for an adhesive property to fall.

[0030] Although the thickness of a glue line 4 can be suitably chosen in the range in which neither an adhesive property nor handling nature is spoiled, generally it is about 2-90 micrometers. If the thickness of adhesive strength of a glue line 4 is weak in less than 2 micrometers and it exceeds 90 micrometers, it will become easy to generate poor taping by the paste flash at the time of increase of the total thickness of a tape, or taping.

[0031] A glue line 4 can be formed by the methods of laminating common use for having used for example, the extrusion laminating method, the T-die tandem extrusion laminator, etc., such as a co-extrusion method and the dry laminate method.

[0032] A conductive layer 5 is formed of vacuum evaporation. Although a conductive layer 5 may be formed in the field of both the tooth back of a base material 1, and the front face of a glue line 4 like the example of drawing 1, it can also be prepared only in either among the tooth back of a base material 1, and the front face of a glue line 4.

[0033] As an ingredient with which vacuum evaporation is presented, the alloy containing said metals, such as metals, such as aluminum, Cu, Ag, nickel, Ti, Fe, Cr, Zr, Ta, and Zn, and SUS, an inorganic oxide, etc. are mentioned just possible [vacuum evaporation]. Also in these, the alloy containing a metal or this metal is desirable.

[0034] Although the thickness of the conductive layer 5 by vacuum evaporation can be suitably chosen in the range which does not spoil transparency, an adhesive property, etc., generally it is about 1-200Å. Although the electrostatic prevention effectiveness is high when the electrostatic prevention effectiveness falls and it exceeds 200Å in less than 1Å, since transparency is worsened or the adhesive property over a carrier tape falls, it is not desirable. Vacuum evaporation can be performed by the approach of the common use which used the vacuum evaporation system.

[0035] Especially in the covering tape for electronic-parts conveyance of this invention, it is desirable

102ohm/**-1013ohm/**, and that the surface resistivity of both front faces is in the range of 104ohm/** - 5x1012ohms / **. This surface resistivity can be adjusted by choosing suitably the class of ingredient which constitutes a conductive layer 5, the thickness of a conductive layer 5, etc.

[0036] Moreover, as for especially the friction band electrical potential difference of the front face by the side of a glue line, it is desirable that it is less than [30V] above all below 1000V below 3000V. A friction band electrical potential difference can be adjusted by choosing suitably the class of ingredient which constitutes a conductive layer 5, the thickness of a conductive layer 5, the thickness of the under coat which consisted of electrostatic-induction inhibitors, etc.

[0037] Furthermore, it is desirable that light transmission is 70% or more 60% or more especially on the covering tape for electronic-parts conveyance of this invention. The light transmission of a tape can be adjusted by choosing suitably the thickness of the ingredient which constitutes each class of a base material, an under coat, an interlayer, a glue line, and a conductive layer, or each class. Especially, in this invention, since a conductive layer is formed by vacuum evaporation and conductivity can be given by very thin thickness, high transparency can be held.

[0038] The electronic-parts conveyance object of this invention is equipped with the electronic-parts hold section which holds electronic parts, and the covering tape for covering this electronic-parts hold section, and the covering tape for electronic-parts conveyance of above-mentioned this invention is used as this covering tape.

[0039] The conveyance object which consists of an embossing carrier tape on which the electronic-parts hold crevice for holding electronic parts is formed in the die-length direction at intervals of predetermined in the crosswise abbreviation center section as a typical example of such an electronic-parts conveyance object, and a covering tape for electronic-parts conveyance for covering the top face of said electronic-parts hold crevice is mentioned.

[0040] Plastic film, such as paper; polyethylene, such as Japanese paper, crepe paper, a synthetic paper, mixed papermaking, and compound paper, polypropylene, polyethylene terephthalate, a polyvinyl chloride, and cellophane, or a sheet; metallic foil can be used that what is necessary is just what has free-standing as the quality of the material of said embossing carrier tape.

[0041] Moreover, the conveyance object which consists of the angle hole punch carrier tape which made the punch hole of the square shape which puts in components as other examples of the electronic-parts conveyance object of this invention, a bottom covering tape for covering the inferior surface of tongue of the angle hole of this angle hole punch carrier tape, and a top covering tape for covering the top face of the angle hole of an angle hole punch carrier tape is mentioned. In such a conveyance object, the covering tape for electronic-parts conveyance of this invention can be used as for example, the above-mentioned top covering tape.

[0042] The covering tape for electronic-parts conveyance and electronic-parts conveyance object of this invention can be used suitable for conveyance of extensive chip mold electronic parts, such as capacitors, such as resistors, such as a chip fixed resistor, and a stacked type ceramic condenser, etc.

[0043]

[Effect of the Invention] Since according to this invention the conductive layer by vacuum evaporation is prepared at least in one side while on [preparing a specific layer between the base material of a covering tape, and a glue line, and] a base material tooth back and the front face of a glue line, the static electricity faults, such as an electrostatic discharge of the electronic parts by contact on the frictional electrification by the vibration at the time of transportation of electronic parts etc. and a covering tape glue line front face and exfoliation electrification at the time of covering tape exfoliation, can be prevented. Moreover, since a conductive layer can be used as a very thin thin film layer, high transparency can be held and it excels in the visibility of electronic parts. Moreover, while being able to prepare a conductive layer in a base material tooth back, even if it prepares a conductive layer in a glue line front face, since it can form in a thin film, the adhesive property of a glue line is not spoiled but variation in the peel strength at the time of exfoliation can be made small. Therefore, the various process troubles in a series of processes of resulting in the inclusion process from conveyance of electronic parts to the circuit board can be prevented, and the dependability of components and the dependability of mounting improve greatly.

[0044]

[Example] Hereafter, although this invention is explained more to a detail based on an example, this invention

is not limited at all by these examples.

[0045] example 1 ethylene / vinyl acetate (EVA) resin (the Mitsubishi Plastics Industries, Ltd. make --) the "trade name LV 360" 100 weight section and alicycle group saturated hydrocarbon system resin (the Yasuhara Chemical make --) the trade name "chestnut ARON P115" 15 weight section and an anti-oxidant (the product made from tiba special KEMIKARUZU --) the trade name "IRG#1010" 0.5 weight section and the Nonion system surfactant (the Nippon Oil & Fats Co., Ltd. make --) Melting mixing of the trade name "Nonion HS-210" 1.0 weight section is carried out with a 2 shaft kneading machine. After performing co-extrusion with polyethylene (PE), urethane system adhesives are minded for this with a dry lamination process. To polyester film Lamination, The tape (the total thickness of 50 micrometers) which has the lamination of a glue line (EVA; thickness of 15 micrometers) / interlayer (PE; thickness of 10 micrometers) / under coat (urethane system adhesives; thickness of 0.5 micrometers) / base material (polyester; thickness of 25 micrometers) was produced. It vapor-deposited on the support surface and glue line front face of this tape by having used Metal SUS, the conductive layer with a thickness [of 70A] and a thickness of 50A was formed in them, respectively, and the covering tape was obtained.

[0046] the example 2 medium-density-polyethylene (semi-gross density PE; Mitsui Chemicals, Inc. make, trade name "neo ZEKKUSU 40150C") 80 weight section and a potassium ionomer (Product made from Mitsui DEYUPON poly chemical --) The "trade name SD 100" 20 weight section (a total of 100 polymer weight sections), The resin constituent obtained by carrying out melting mixing of the petroleum system resin (trade name "Al Cong P-90") 20 weight section and the phenolic antioxidant (Ciba-Geigy make, trade name "IRUGA NOx 1010") 0.5 weight section with a 2 shaft kneading machine, Polyethylene (PE) and the admixture which added the antistatic-agent (others [quarternary ammonium salt]) 10 weight section in the amount polypropylene of macromolecules (amount PP of macromolecules) 100 weight section are given to a three-layer co-extrusion. The tape (the total thickness of 55 micrometers) which has the lamination of a glue line (semi-gross density PE+ potassium ionomer; thickness of 15 micrometers) / interlayer (PE; thickness of 15 micrometers) / base material (the amount PP of macromolecules; thickness of 25 micrometers) was produced. It vapor-deposited by having used Metal aluminum for the support surface of this tape, the conductive layer with a thickness of 40A was formed, and the covering tape was obtained.

[0047] The dryblend of the example of comparison 1 styrene-butadiene-styrene block-copolymer (SBS; 20 % of the weight of styrene contents) 70 weight section and the ethylene-alpha olefin copolymerization resin 30 weight section was carried out, and as an electric conduction agent, the tin-oxide 30 weight section was added, and was kneaded and pelletized. Membranes were formed by giving the pellet and PE resin which were obtained to the bilayer co-extrusion by the inflation extruder. Perform corona treatment to the front face of PE layer of the obtained film, and the laminating of the polyethylene terephthalate (PET) film is carried out by the dry laminate method using urethane system adhesives. Aging processing is performed at 50 degrees C for 24 hours. The lamination of an electric conduction agent content glue line (SBS+ ethylene-alpha olefin copolymerization resin + electric conduction agent; thickness of 15 micrometers) / interlayer (PE; thickness of 15 micrometers) / under coat (urethane system adhesives; thickness of 0.5 micrometers) / base material (PET; thickness of 16 micrometers) The tape (the total thickness of 46 micrometers) which it has was produced.

[0048] The dryblend of example of comparison 2 ethylene / vinyl acetate (EVA) resin (15 % of the weight of vinyl acetate contents) 75 weight section, and the ethylene-alpha olefin copolymerization resin 25 weight section was carried out, and as an antistatic agent, the quarternary-ammonium-salt 0.5 weight section was added, and was kneaded and pelletized. Membranes were formed by giving the pellet and PE resin which were obtained to the bilayer co-extrusion by T dice extruder. Perform corona treatment to the front face of PE layer of the obtained film, and the laminating of the antistatic polyethylene terephthalate (PET) film is carried out by the dry laminate method using urethane system adhesives. Aging processing is performed at 50 degrees C for 24 hours. The lamination of an antistatic-agent content glue line (EVA+ ethylene-alpha olefin copolymerization resin + antistatic agent; thickness of 15 micrometers) / interlayer (PE; thickness of 10 micrometers) / under coat (urethane system adhesives; thickness of 0.5 micrometers) / base material (antistatic [PET]; thickness of 25 micrometers) The tape (the total thickness of 50 micrometers) which it has was produced.

[0049] The following trials were performed about each tape obtained in the evaluation trial example and the example of a comparison. The result is shown in Table 1.

(The total thickness) The total thickness (micrometer) of a tape was measured with 1/1000mm dial gage.

(Tensile strength and ductility) By tensilon, it measured the condition for 300mm/in tension rate.

(Adhesive strength for embossing) The glue line side of a tape was put on the sheet front face made from polystyrene in which embossing was formed, using the heat-sealing machine, the sticking-by-pressure back was measured for 0.5 seconds on condition that the temperature of 140 degrees C, and pressure 2.5 kgf/cm² (250kPa), and the exfoliation force was measured in ordinary temperature on a part for 300mm/in exfoliation rate, and conditions with an exfoliation include angle of about 180 degrees (3 times of averages). Moreover, the difference (adhesive strength min-max) of the maximum of measured value and the minimum value performed 3 times was searched for.

[0050] (Surface resistivity) The surface resistivity of a glue line side front face and a base material side front face was measured with the very small current electrometer.

(Reduction-by-half value) JIS L Based on 1094, the half-life was measured in static ONESUTO meter. In addition, a reduction-by-half value electrifies the base material side front face of a tape, and means time amount until the electrical potential difference reaches the value of the one half of initial voltage.

[0051] (Friction band electrical potential difference) JIS L Based on 1094, the glue line side front face of a tape was ground against cloth, and the band electrical potential difference was measured. Moreover, the friction band electrical potential difference was measured on condition that 20 degrees C and 25%RH, and it considered as the friction-under damp band electrical potential difference.

(Components adhesion) the glue line and chip (50 pieces) of a tape are contacted -- making -- 50 degrees C -- 10 minutes -- warming -- it asked for the rate to which the chip adhered the back.

(Light transmission) The light transmission of a tape was measured by the hazemeter.

[0052]

[Table 1]

表 1

	実施例 1	実施例 2	比較例 1	比較例 2
総厚み (μm)	50	55	46	50
引張り強度 (N/5.25mm)	25	15	23	25
伸度 (%)	120	270	120	124
対エポキシ接着力 (N/2mm)	0.20	0.30	0.40	0.15
接着力min-max (N/2mm)	0.03	0.06	0.18	0.10
表面抵抗率 (Ω/□) 接着層側の面 支持体側の面	1.5×10^7 5.0×10^8	2.7×10^{11} 1.5×10^9	2.0×10^{10} —	3.6×10^{11} 2.0×10^{10}
半減値 (sec)	0	0	15	30
摩擦帯電圧 (V)	5	4.5	35	105
低温下摩擦帯電圧 (V)	5	16	260	235
部品付着性 (%)	0	0	15	5
光線透過率 (%)	87	75	35	80

[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Translation done.]